

(19) World Intellectual Property Organization
International Bureau



**(43) International Publication Date
20 October 2005 (20.10.2005)**

PCT

(10) International Publication Number
WO 2005/098244 A2

(51) International Patent Classification⁷: F16B 13/06

(21) International Application Number:

(22) International Filing Date: 6 April 2005 (06.04.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 0403675 8 April 2004 (08.04.2004) FR

(71) **Applicant (for all designated States except US): SOCIETE DE PROSPECTION ET D'INVENTIONS TECHNIQUES SPIT [FR/FR]; 150 Route de Lyon, F-26501 Bourg-Les-Valence (FR).**

(72) Inventors; and

(75) **Inventors/Applicants (for US only): POURTIER, Fabrice [FR/FR]; Lotissement Lou Coumbelou No. 7, F-26800**

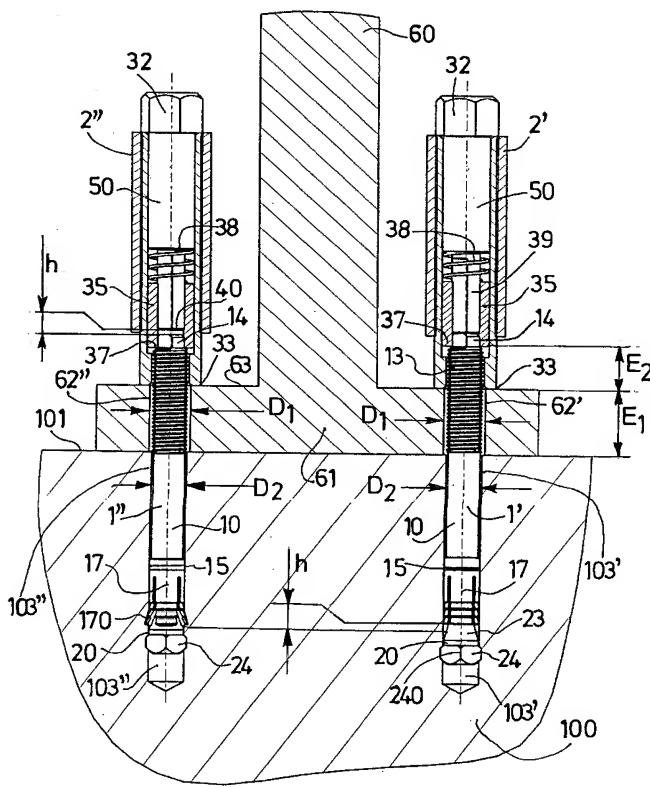
Portes Les Vallence (FR). **RICORDI, Christian** [FR/FR]; 57 Rue de la Capitainerie, F-26500 Bourg Les Vallence (FR).

(81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,

[Continued on next page]

(54) Title: METHOD OF FASTENING A GUARD RAIL BY MEANS OF A GUARD RAIL BOLT, THE GUARD RAIL BOLT AND THE TOOL FOR FASTENING THE GUARD RAIL BOLT



(57) Abstract: The invention relates to a method of fastening a guard rail (60) to a concrete slab (100) by means of a self-expanding and self-undercutting bolt (1, 1', 1'') comprising a dowel (10) having expanding lugs (17) and an expansion core (20, 23), the method comprising a phase consisting in drilling a hole (103', 103'') in the slab, a phase consisting in driving the bolt in to a desired depth (E1 + E2) independent of the depth of the hole, a dynamic tightening phase (h) resulting in the formation of the undercut and a static tightening phase of the guard rail. The guard rail bolt comprises the dowel (10) and a counter-dowel (20). The dowel (10) comprises at its fastening end (11) a guard rail fastening head (13) rigidly connected at its screwing end (12) by means of incipient fracture means (15) to a ring (16) provided with expansion lugs (17). The tool (2) for fastening the guard rail bolt comprises means (32, 50, 39, 35) for driving it in rotation and complementary means (31, 34) for controlling the driving depth of the bolt (1).



SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT,*
- *BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations of inventorship (Rule 4.17(iv)) for US only*

Published:

- *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.